Demographical Analysis of a Spatially-Explicit Individual-Based Cape Sable Seaside Sparrow Model

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SIMSPAR (see P. Nott, 1998) is a spatially-explicit individual-based model for the Cape Sable Seaside Sparrow (Ammodramus maritimus mirabilis), an endangered species present in the Florida Everglades. It was developed as an evaluation and management tool for comparing the relative impacts of hydrological policies on the Cape Sable Seaside Sparrow, and parameterized for the western sub-population. As part of the model development, SIMSPAR has been migrated to an object oriented program to increase model run time performance, enhance output flexibility, allow for possible expansion to other subpopulations, and more fully integrate with other ATLSS component models. The model changes allow for direct analysis of the life history of each individual model sparrow, from which one can draw implications about the relative impacts of various environmental changes on population-level responses. For example, complete family trees can be extracted for demographical analysis and for possible extension to analysis of pedigrees for inclusion of genetics. This allows the examination of the derived life history parameters of the model for comparison to data and for use in sensitivity and uncertainty analysis. Notably, net reproductive rates, survivorship schedules, and causes of fledgling death are all statistics that can be explored. A comparison of these demographic parameters can then be made across various hydrological scenarios and models. (Nott P. Effects of Abiotic Factors on Population Dynamics of the Cape Sable Seaside Sparrow and Continental Patterns of Herpetological Species Richness: An Appropriately Scaled Landscape Approach [dissertation] .Knoxville(TN) : University of Tennessee; 1998)

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